PATENT ABSTRACTS OF JAPAN

(11)Publication number : 2002-171408
(43)Date of publication of application : 14.06.2002

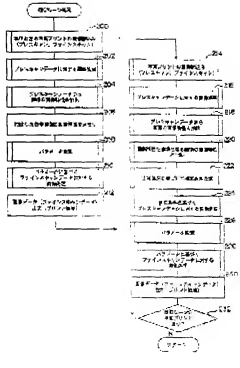
(51)Int.Cl. H04N 1/405
G03G 15/00
G06T 7/00
H04N 1/407

(21)Application number : 2000-366640
(22)Date of filing : 01.12.2000

(71)Applicant : FUJI PHOTO FILM CO LTD
(72)Inventor : KUBO MASAHIRO

(54) IMAGE PROCESSING METHOD AND IMAGE PROCESSING APPARATUS

(57)Abstract:
PROBLEM TO BE SOLVED: To provide an image processing method and an image processing apparatus that can easily uniform the color gradation of a finished photo print or the like when generating the new photo print from photo prints on which images of similar scenes are formed
SOLUTION: In the application of extra print processing to a photo print, a reference image characteristic is extracted fro image data of a reference photo print (steps 200-212). Furthermore, in the image processing to a photo print with a similar scene to that of the reference photo print, the image processing is applied to the image data so that the image characteristic extracted from the image data of the photo print is matched with the characteristic of the reference image (steps 214-232). Thus, the finished quality such as the color gradation of the photo print resulting from copying the image of the reference photo print is uniformized with that of the image of the photo print having a similar scene without the need for manual operations.



LEGAL STATUS

[Date of request for examination]

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]

* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

CLAIMS

[Claim(s)]
[Claim 1] It is the image-processing approach when forming the image of each manuscript in an image recording medium based on the image data of the image currently recorded on two or more manuscripts. The image property of the image currently formed in said manuscript from read in and this image data in the image data of the image of said manuscript is extracted. It compares with the criteria image property of having extracted the image property of this image data from the image data of the manuscript set up as criteria out of said two or more manuscripts. The image-processing approach characterized by performing the image processing to said image data based on the amendment conditions set up so that said image property might be in agreement with said criteria image property.
[Claim 2] An extract means to extract each image property from the image data of the image currently formed in each of two or more manuscripts, The image property extracted with said extract means is compared with the criteria image property which is the image property of the manuscript set up as criteria out of said two or more manuscripts. The image processing system characterized by including an amendment conditioning means to set up the amendment conditions over said image data so that the extracted image property may be in agreement with a criteria image property.
[Claim 3] The image processing system according to claim 2 characterized by setting up so that said extract means may extract highlights, a shadow, and image concentration at least as said image property and said amendment conditioning means may double the average thru/or the median of highlights, a shadow, and image concentration with a criteria image property.

[Translation done.]

* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] This invention relates to the image-processing approach when forming the image of this manuscript in a new image recording medium, and an image processing system from the photoprint by which the image was formed in printing paper by using as a manuscript the image recording medium by which the image was formed on the occasions, such as obtaining a new photoprint
[0002]
[Description of the Prior Art] In a DPE store or a lab, if the photoed photographic film is carried in, a development will be performed to this photographic film. If creation of a coincidence print is requested at this time, printing paper will be exposed according to the image currently recorded on the photographic film, a photoprint will be created, and a photoprint will be returned to a customer with a photographic film.
[0003] After performing various image processings to the image data (digital image data) which, on the other hand, read and created with the scanner etc. the image currently recorded on the photographic film with diversification of an image processing, the print system which uses this image data and creates a photoprint has spread.
[0004] Although the DTP service which creates a photoprint from the image data of the image photoed by the digital still camera may be requested with the spread of digital still cameras (DSC) in recent years etc. in a DPE store, DTP service is possible by using the above-mentioned photoprint system.
[0005] By the way, such a photoprint is arranged on an album etc., and is kept and it prints additionally, and a request looks at photoprints, such as this album, and is performed. For this reason, in a DPE store, a photoprint may be carried in and the increase of a glow may be requested.
[0006] In spite of being a scene similar like the ** with the scene, photographic subject, and background same on the other hand which followed the photoprint, for example, when color balance, image concentration, etc. of an image which are formed differ from each other, results may differ and it may be visible. When performing a coincidence print generally, an image processing is performed using the average of the image concentration currently recorded on the photographic film, and a photoprint is created. For this reason, even when photography conditions are few, when it differs, for example, in spite of being the continuous scene or a similar scene, results may differ and it may be visible.
[0007] It may be required that a result should be arranged when the increase of a glow of the photoprint of such a similar scene is requested. In this case, to each photoprint, displaying an image on a monitor etc., various kinds of processing conditions must be set up by manual actuation, an image processing must be performed, and there is a problem referred to as becoming the complicated activity which requires time amount.
[0008]
[Problem(s) to be Solved by the Invention] This invention is made in consideration of the above-mentioned fact, and manuscripts, such as image recording media, such as a photoprint in which

the image of a similar scene was formed, are carried in. When the request which forms in a new image recording medium the image currently formed in this manuscript and which is printed additionally (image copy) is received, it aims at proposing the image-processing approach and image processing system which can arrange easily a result of the image printed additionally.
[0009]
[Means for Solving the Problem] This invention for attaining the above-mentioned purpose is based on the image data of the image currently recorded on two or more manuscripts. It is the image-processing approach when forming the image of each manuscript in an image recording medium. The image property of the image currently formed in said manuscript from read in and this image data in the image data of the image of said manuscript is extracted. It compares with the criteria image property of having extracted the image property of this image data from the image data of the manuscript set up as criteria out of said two or more manuscripts. It is characterized by performing the image processing to said image data based on the amendment conditions set up so that said image property might be in agreement with said criteria image property.
[0010] According to this invention, the image property of influencing a result of images, such as color gradation, is extracted from the image data which read each of the image currently recorded on two or more manuscripts. Then, the image property of the manuscript used as the criteria specified in two or more manuscripts is made into a criteria image property, and an image processing is performed based on the amendment conditions which set up the image data of other manuscripts so that an image property might be in agreement with a criteria image property.
[0011] When forming in an image recording medium the image of two or more manuscripts with which the similar scene is formed by this, for example, it is not visible with the scene from which it becomes easy with which to make it in agreement with a result of the image of the manuscript on the basis of a result of an image, and a similar scene differs.
[0012] An extract means to extract each image property from the image data of the image with which the image processing system of this invention is formed in each of two or more manuscripts, The image property extracted with said extract means is compared with the criteria image property which is the image property of the manuscript set up as criteria out of said two or more manuscripts. It is characterized by including an amendment conditioning means to set up the amendment conditions over said image data so that the extracted image property may be in agreement with a criteria image property.
[0013] According to this invention, the image data of the image currently recorded on the manuscript is read with an image data read in means. An extract means extracts the image property of influencing a result of images, such as color gradation, from this image data. Moreover, an amendment conditioning means sets up the amendment conditions when performing an image processing so that it may be in agreement with the image property (criteria image property) of an image that this image property serves as criteria. Based on this amendment condition, the image data the image with which an image property serves as criteria, and whose result correspond is generable by performing the image processing to image data.
[0014] When forming in an image recording medium the image of two or more manuscripts with which the similar scene was formed by this For example, it becomes generable [the image data used as the image set by the image property of the manuscript which serves as these criteria by specifying the manuscript which serves as criteria from two or more manuscripts]. A result of the image formed in an image recording medium can be arranged, and it is not visible to the scene from which a similar scene differs.
[0015] Since the extract of the image property from image data and a setup of the amendment conditions based on an image property become automatable at this time, a result of the image formed in an image recording medium easily and correctly can be arranged. That is, a result of two or more images formed in an image recording medium can be arranged, without setting up amendment conditions by manual actuation.
[0016] The image which two or more manuscripts applied to such this invention had the photographic subject thru/or the the same background among two or more manuscripts, and was

photoed continuously, and the image with which the photographic subject or the background is similar should just be formed.
[0017] Moreover, what is necessary is for said extract means to extract highlights, a shadow, and image concentration at least as said image property, and just to set up in the image processing system of this invention, so that said amendment conditioning means may double the average thru/or the median of highlights, a shadow, and image concentration with a criteria image property.
[0018] According to this invention, highlights of the image properties, a shadow, and image concentration are extracted as an image property. For example, between the images of a similar scene, the average thru/or the median of highlights, a shadow, or image concentration will be in agreement. That is, if the photographic subject or the background is the same, the average and the median of highlights of an image, a shadow, or image concentration must be in agreement.
[0019] Therefore, if it is the image of a similar scene, a result of the image formed in the image recording medium can be arranged by doubling the average thru/or the median of highlights of the image when forming in an image recording medium, a shadow, and image concentration.
[0020]
[Embodiment of the Invention] The gestalt of operation of this invention is explained referring to a drawing below. The outline configuration of the print processing system 10 applied to the gestalt of this operation is shown in drawing 1 . The print processing system 10 is equipped with the image processing system 12 and the printer processor 18, and the image processing system 12 and the printer processor 18 are connected by the interface of for example, IEEE1394 specification etc. Thereby, transmission and reception of image data etc. are possible between an image processing system 12 and the printer processor 18.
[0021] As shown in drawing 1 and drawing 2 , the printer processor 18 is formed of the scanner 28, the digital printer (henceforth "a printer 42"), and the processor 44, and scan exposure of the printing paper 50 (refer to drawing 4) which is a kind of photosensitive material by the printer 42 according to the image data read with the scanner 28 is possible for it. Moreover, a processor 44 carries out the development of the printing paper 50 which carried out scan exposure by the printer 42. In addition, as a print processing system 10, a scanner 28, a printer 42, and a processor 44 may be another objects.
[0022] In the print processing system 10, the scanner 28 is used as an image data read means, the image currently formed in the various manuscripts of photoprint 62 grade is read with a scanner 28, and the read image data is outputted to an image processing system 12. Moreover, in the print processing system 10, the image data which the image processing gave with the image processing system 12 is outputted to the printer 42 of the printer processor 18. Print which creates a new photoprint (henceforth "a photoprint 64") from a photoprint 62 by this as shown in drawing 1 to Print service is possible.
[0023] As shown in drawing 3 , the CCD line sensor 80 currently formed of the CCD arrays 78R, 78G, and 78B which detect the light of the light source 76 (76R, 76G, 76B) which a scanner 28 turns the light of each color of R, G, and B to a manuscript (manuscript image), and is emitted, and each color of R, G, and B reflected according to the manuscript image is formed.
[0024] The photoprint 62 which the platen glass 82 which is clear glass is formed in the scanner 28, and is used for it as a manuscript is laid where an image side is turned to platen glass 82 below, and it is covered and held with the presser-foot covering 84. Moreover, the light source 76 described above to the way side (inferior-surface-of-tongue side) and the optical system 88 constituted with the CCD line sensor 80 with two or more reflective mirror 86, various lenses, and filters are formed in the scanner 28 among platen glass 82.
[0025] Thereby, f reflected by the photoprint 62, the light which irradiated the photoprint 62 from the light source 76 will be reflected and turned up by two or more reflective mirrors 86, and image formation will be carried out to the CCD line sensor 80 by penetrating optical system 88 further. Moreover, the image currently formed in the photoprint 62 is read into the CCD line sensor 80 by displacing relatively the light source 76 and two or more reflective mirrors 86 to a photoprint 62 so that the optical path length of a photoprint 62 and the CCD line sensor 80 may become fixed (vertical scanning).

[0026] A scanner 28 carries out A/D conversion of the image read with the CCD line sensor 80, and outputs it as image data (digital image data) of each color of R, G, and B of the image currently formed in the photoprint 62. Moreover, with a scanner 28, after performing the press can which reads an image with a low resolution, the fine scan which reads an image with high resolution is performed. Thereby, the image data (press can data) read by the press can and the image data (fine scan data) read with a fine scan are inputted into an image processing system 12.

[0027] In addition, only a fine scan is performed, and the image data read with a fine scan is changed into the image data of a low resolution with a scanner 28 or an image processing system 12, and you may make it use it with a scanner 28 as image data by which the press can was carried out. Moreover, the reflective mold image reader of a general configuration of reading the image currently recorded on the reflection copy as a scanner 28 can be applied, and detailed explanation is omitted with the gestalt of this operation.

[0028] As shown in drawing 4 , the printer 42 formed in the printer processor 18 is equipped with an image memory 46 and the exposure section 48, and once memorizes the image data inputted from an image processing system 12 to an image memory 46.

[0029] The exposure section 48 of a printer 42 is loaded with printing paper 50 as an image recording medium, and if image data is inputted, a printer 42 will pull out roll-like printing paper 50 from a periphery edge, and will expose this printing paper 50 according to image data. The printing paper 50 by which image exposure was carried out is sent out to a processor 44. As the exposure section 48, for example In addition, the laser light source 52 of each color of R, G, and B, It has the scan optical system (illustration abbreviation) constituted with the polygon mirror, ftheta lens, etc. The general configuration which exposes printing paper 50 according to image data can be used by irradiating the laser beam of each color of R, G, and B according to image data from a laser light source 52 (horizontal scanning), carrying out vertical-scanning conveyance of the printing paper 50 with constant speed.

[0030] The processor 44 has general composition equipped with the processing liquid processing section 54, a dryer part 56, and the sorter section 58, and a processor 44 performs desiccation processing, after performing processing liquid processing of the color development, bleaching, fixing, rinsing, etc. to the printing paper 50 which image exposure is carried out and is sent in. Thereby it develops the image exposed by printing paper 50. Moreover, a cutter 60 is formed in a processor 44, the printing paper 50 which desiccation processing ended is cut in every image (image comma), as a new photoprint (it considers as "a photoprint 64" below), it discharges to the sorter section 58 and it is piled up.

[0031] In addition, in the print processing system 10, by inputting into an image processing system 12 image data other than the image data read with the scanner 28, creation of the photoprint (it considers as "a photoprint 62" below) based on this image data is attained, and the photoprint created based on the image data read with the scanner 28 is distinguished as "a photoprint 64" below.

[0032] Moreover, the image data which read the image currently recorded on photographic films which the development ended, such as a negative film and a positive film, as image data when creating a photoprint 62 by the film scanner can be used. Thereby, a photoprint 62 can be created succeeding the development of a photographic film (coincidence print processing).

[0033] Moreover, as such image data, a photograph may be taken by the digital still camera (DSC) etc., and it may be recorded on various storage media, such as SmartMedia. That is, the digital print service which creates a photoprint 62 from the image data memorized by storage media may be possible.

[0034] Furthermore, creation of the index print which exposed printing paper 50 according to this image data may be possible for the print processing system 10 by outputting the image data for an index print which has arranged the image of one duty of a photographic film, and the image for one sheet of SmartMedia (image data) in the shape of a matrix from the image processing system 12 to the printer processor 18.

[0035] Moreover, as a print processing system 10, a photoprint 62 is created based on the image data inputted into the image processing system 12 by means of communications, such as a

network.
[0036] As shown in drawing 5 , the image processing system 12 is equipped with the image memory 30 which memorizes the image data inputted from scanner 28 grade. Memory 30B and ** which remember the image data (fan scan data) read with a fine scan to be memory 30A which memorizes the image data (pre scanner data) which read this image memory 30 by the press can are prepared. Each of this memory 30A and 30B can memorize now the image data (press can data and fine scan data) read from the photoprint 62 of two or more sheets. In addition, you may make it memorize logarithmic transformation (Log conversion), DC offset amendment, and the image data that performed amendment, a shading compensation, etc. at the time of dark in an image memory 30 to the image data by which read from the scanner 28 and A/D conversion was carried out.
[0037] The autoset rise section 100 which processes press can data, and the fan scan data-processing section 102 which performs processing of fan scan data are formed in the image processing system 12. The press can data memorized by memory 30A of an image memory 30 are read to the autoset rise section 100, and the fan scan data memorized by memory 30B are read to the fine scan data-processing section 102.
[0038] The image amendment section 108 which performs the distortion aberration amendment, the amendment processing of the chromatic aberration of magnification, sharpness processing, and automatic cover glow processing based on the LUT-MTX operation part 106 and the chromatic-aberration property of a lens that the autoset rise section 100 performs color balance adjustment, contrast amendment, depth-of-shade amendment, etc. in the image-processing section 104 is formed. Thereby, in the autoset rise section 100, press can data are read into the image-processing section 104, color balance adjustment based on LUT (look-up table) set up beforehand, contrast amendment (gradation processing), depth-of-shade amendment, etc. are performed in the LUT-MTX operation part 106, and matrix operation performs saturation amendment etc. Moreover, in the autoset rise section 100, amendment of distortion aberration, amendment processing of the chromatic aberration of magnification, sharpness processing, automatic cover glow processing, etc. based on the aberration property of a lens are performed to press can data in the image amendment section 108.
[0039] In addition, as shown in drawing 2 , the image processing system 12 is equipped with the monitor 12M and keyboard 12K grade, and can display the image based on the image data processed in the autoset rise section 100 on monitor 12M. Moreover, in the autoset rise section 100, although various processings to image data are performed automatically, if processing conditions etc. are inputted as resemble a key stroke etc., manual actuation of performing the image processing based on this processing condition is possible [an input thru/or a setup, etc. of processing conditions in case the key stroke of keyboard 12K performs an image processing is attained, and] for the autoset rise section 100.
[0040] As shown in drawing 5 , the parameter setup section 110 is formed in the autoset rise section 100. This parameter setup section 110 sets up various kinds of parameters when performing the image processing to fine scan data based on the image processing to the press can data performed in the LUT-MTX operation part 106 and the image amendment section 108.
[0041] Moreover, the LUT-MTX operation part 114 and the image amendment section 116 are formed in the image-processing section 112, and processing equivalent to the image processing performed to press can data in the image-processing section 104 of the autoset rise section 100 is performed in the fine scan data-processing section 102 to the fine scan data memorized to image memory 30B. At this time, image processings, such as color balance adjustment, contrast amendment (gradation amendment), depth-of-shade amendment, saturation amendment and amendment of the distortion aberration based on the aberration property of a lens, amendment processing of scale-factor aberration, sharpness processing, and automatic cover glow processing, are performed to fine scan data in the image-processing section 112 based on the parameter set up in the parameter setup section 110 of the autoset rise section 100.
[0042] That is, in the fine scan data-processing section 102, an image processing equivalent to press can data is possible to fine scan data by performing an image processing to fine scan data based on the parameter set up in the parameter setup section 110 of the autoset rise section

100.
[0043] In addition, in the image-processing section 104 of the autoset rise section 100, and the image-processing section 112 of the fine scan data-processing section 102, conventionally well-known various processings of for example, gray balance adjustment, gradation adjustment, concentration adjustment, saturation adjustment, sharpness (sharp-izing) processing, automatic cover baking processing, electronic variable power processing, geometrical processing, the amount amendment processing of ambient light, soft focus processing, bloodshot-eyes amendment processing, etc. are performed by the LUT-MTX operation part 106 and 114 and the image amendment sections 108 and 116. That is, the configuration of the arbitration which performs various, conventionally well-known processings of gray balance adjustment, gradation adjustment, concentration adjustment, saturation adjustment, sharpness (sharp-izing) processing, automatic cover baking processing, electronic variable power processing, geometrical processing, the amount amendment processing of ambient light, soft focus processing, bloodshot-eyes amendment processing, etc. as the image-processing section 104 of the autoset rise section 100 and the image-processing section 112 of the fan scan data-processing section 102 can be used.
[0044] By the way, the image property extract section 120 is formed in the autoset rise section 100. This image property extract section 120 extracts the description of the image currently formed in the photoprints 62, such as the average of creation of a gray level histogram, and image concentration and a median, LATD (large area transmission density), highlights (least concentration), and a shadow (maximum density), from the image data (press can data) processed in the image-processing section 104.
[0045] Moreover, the autoset rise section 100 is equipped with the amendment conditioning section 122 and memory 124. When an image property is extracted from the image data of the image which serves as criteria in the image property extract section 120 in memory 124, this image property is memorized as a criteria image property.
[0046] If the image property of the image set up so that it might finish as an image equivalent to the image which serves as criteria in the image property extract section 120 is extracted from [illegible] amendment conditioning section 122 will compare the [illegible] memorized by this image property and memory 124, and will set up the [illegible], making the image and result used as criteria equivalent.
[0047] In the autoset rise section 100, if amendment conditions are set up in the amendment conditioning section 122, the image processing (amendment processing) based on this amendment condition will be again performed in the LUT-MTX operation part 106 and the image amendment section 108. Moreover, in the parameter setup section 110, a parameter is set up to compensate for the image processing based on the amendment conditions set up in the amendment conditioning section 122.
[0048] In the fine scan data-processing section 102, an image processing is performed based on the parameter which did in this way, and the image processing was carried out and was set up. The image processing to the fine scan data based on the amendment conditions set up in the amendment conditioning section 122 by this is possible.
[0049] When [at which two or more photoprints 62 in which the scene similar, for example is formed in the image processing system 12 are received] it prints additionally and processing (reprint processing) is requested The image property extracted from the image data of the photoprint 62 (referred to as "photoprint 62A" below) specified that the image used as criteria is formed If the image of the photoprint 62 (referred to as "photoprint 62B" below) specified that it memorizes in memory 124 as a criteria image property, and this photoprint 62A and a similar scene are formed is read As compared with the criteria image property of having memorized the image property extracted from the image data of this photoprint 62B in memory 124, amendment conditions are set up so that the image property of photoprint 62B may be in agreement with the image property (criteria image property) of photoprint 62A.
[0050] While creating the gray level histogram of an image in the image property extract section 120 at this time, based on this gray level histogram, the average of image concentration thru/or a median, LATD highlights (least concentration), a shadow (maximum density), etc. are extracted as an image property.

[0051] the amendment conditioning section 122 -- desirable -- a gray level histogram, LATD, image concentration (the average thru/or median), highlights, or a shadow -- amendment conditions are set up so that image concentration (the average thru/or median), highlights, or a shadow may be in agreement at least, and in the parameter setup section 110, a parameter is set up so that the image property of the image of photoprint 62B may be made in agreement with the image property of photoprint 62A.
[0052] By doubling the average and the median of for example, image concentration here the image concentration of the image of photoprint 62B It can shift so that it may be in agreement with the image concentration of the image of photoprint 62A. The shadow of the image (image data) of photoprint 62B, and highlights furthermore, by making it in agreement with the shadow of the image of photoprint 62A, and highlights The color balance of the image of photoprint 62B, image concentration, color gradation, etc. can be doubled with photoprint 62A.
[0053] Thus, the photoprint 64 whose mutual image property corresponded is obtained by exposing printing paper 50 using the image data by which the image processing was carried out based on the set-up parameter.
[0054] Namely, when creating the new photoprint 64 from the photoprint 62 of two or more sheets in an image processing system 12 When it is chosen that it is the scene to which the photoprint 62 of two or more sheets was similar In the image property of the photoprint 62 (photoprint 62A) specified as criteria from the photoprint 62 of two or more sheets The image property of other photoprints 62 (photoprint 62B) is made in agreement, and the photoprint 64 in which the image currently formed in each photoprint 62 was formed is made to be obtained. He is trying for a result of the image of the photoprint 64 to photoprint 62B in which the image of the photoprint 64 to photoprint 62A used as criteria and the image of a scene similar to this image are formed to become the same with an image processing system 12 by this.
[0055] In addition, the print processing system 10 is equipped with an input means which is not illustrated to input print conditions and order conditions, such as print size, print number of sheets, and a result, and processing based on the print conditions and the order conditions of [illegible] input means is performed.
[0056] Below, an operation of the gestalt of this operation is explained. First, the photoprint 62 is carried in and creates the new photoprint 64 from this photoprint 62 in the print processing system 10 applied to the gestalt of this operation to If a request of Print carry out is received, a scanner 28 will be loaded with this photoprint 62, and an image will be read with a press can and a fine scan.
[0057] The image data (press can data and fine scan data) obtained by this is memorized by the memory 30A and 30B of the image memory 30 of an image processing system 12.
[0058] If the press can data memorized by memory 30A are read in an image processing system 12, at the autoset rise section 100, to this press can data, it will carry out automatically and various amendments, such as color balance adjustment, contrast amendment (gradation processing), depth-of-shade amendment, amendment of saturation amendment distortion aberration, amendment of scale-factor aberration, sharpness processing, and automatic cover glow processing, will set up the parameter based on this amendment processing. In addition, in an image processing system 12, while the image processing based on the amendment conditions inputted by being able to check propriety and inputting amendment conditions by the key stroke (manual actuation) if needed is performed by displaying the amended image on monitor 12M, a setting change of the parameter according to this image processing is made
[0059] An image processing system 12 will perform the image processing to fine scan data based on this parameter for the fine scan data memorized to the image memory 30 (memory 30B) in read-out and the fine scan data-processing section 102, if various kinds of parameters are set up based on press can data.
[0060] Thus, the fine scan data to which the image processing was performed with the image processing system 12 are changed into the image data for exposing printing paper 50, and are outputted to the printer 42 of the printer processor 18.
[0061] By the printer 42, if scan exposure of the printing paper 50 is carried out based on the image data inputted from an image processing system 12, this printing paper 50 will be sent out

to a processor 44. If the printing paper 50 by which image exposure was carried out is sent in, a processor 44 will be cut and discharged for every image coma, after performing processing liquid processing and desiccation processing to this printing paper 50. Thereby, in the print processing system 10, the photoprint 64 in which the image of a photoprint 62 and the image of an equivalent result were formed can be obtained.

[0062] By the way, the photoprint 62 of two or more sheets in which the image of a similar scene is formed is carried in, and it is Print. to Print service may be requested. Since color balance, image concentration, color gradation, etc. have a difference in spite of being a similar scene at this time, creation of the photoprint 64 which is visible in case of the sheet which may not appear as a similar scene and was similar may be requested. That is, when copying the photoprint 62 of two or more sheets and creating a photoprint 64, it may be requested to arrange the image quality of a result of a photoprint 64.

[0063] Here, it prints for obtaining the photoprint 64 which arranged the image quality of a result from the photoprint 62 of the scene which was similar while referring to the flow chart shown in drawing 6 additionally, and the outline of processing is explained.

[0064] This flow chart is performed by choosing copy processing of a similar scene by the actuation means which is not illustrated, at the first step 200, loads a scanner 28 with photoprint 62A specified as criteria out of the photoprint 62 of two or more sheets in which the image of a similar scene is formed, and performs the press can of an image and fine scan which are formed in this photoprint 62A. The press can data and fine scan data which are obtained by this and which are image data are memorized in the image memory 30 (memory 30A and 30B) of an image processing system 12, respectively.

[0065] If the press can data and fine scan data to an image of photoprint 62A are memorized in an image memory 30, it will shift to step 202 and an image processing will be performed for the press can data memorized to memory 30A to read in and this press can data in the image-processing section 104 of the autoset rise section 100.

[0066] At this time, in the image-processing section 104, an image processing is performed so that [illegible] of the image formed in the photoprint 64 which copied the [illegible] photoprint 62A may [illegible] with a result of the image of photoprint 62A.

[0067] Moreover, although usually carried out automatically, when amending a result of a photoprint 64, it may be made to perform the image processing to press can data by manual actuation of inputting processing conditions, amendment conditions, etc. after performing an image processing at this step by the key stroke. Thereby, a result of a request of the image tone as a photo can be made into desired image quality.

[0068] After the image processing to the press can data of the image of photoprint 62A used as criteria is completed, it shifts to step 204 and image properties, such as a gray level histogram, average concentration, LATD, highlights, and a shadow, are extracted from the press can data which the image processing ended. The image property extracted here is memorized by memory 121 as a criteria image property (step 206).

[0069] Moreover, at step 208, various kinds of parameters for performing an image processing equivalent to press can data to fine scan data are set up based on the processing result in the image-processing section 104.

[0070] Thus, after the image processing to press can data is completed, it shifts to step 210 and the image processing to fine scan data is performed. The image processing to fine scan data reads the fine scan data memorized to memory 30B to the fine scan data-processing section 102, and performs an image processing to it based on the parameter set up in the parameter setup section 110 to this fine scan data.

[0071] At this time, an image processing equivalent to the image processing to press can data can be performed by performing the image processing to fine scan data based on the various parameters set up in the parameter setup section 110.

[0072] Termination of the image processing to fan scan data outputs the image data (for example, image data changed into the image exposure in a printer 42) according to the fine scan data which processing ended to the printer 42 of the printer processor 18 at step 212.

[0073] Thereby, in the printer processor 18, printing paper 50 is exposed according to the image

data processed with the image processing system 12, and the photoprint 64 which copied the image of photoprint 62A is created.

[0074] After the processing to photoprint 62A on which the image used as criteria is recorded on the other hand is completed, it shifts to step 214, a scanner 28 is loaded with photoprint 62B in which the image currently formed in photoprint 62A and the image of a similar scene were formed, and the image of this photoprint 62B is read. The image data (press can data and fine scan data) obtained by this is memorized in an image memory 30 (memory 30A and 30B).

[0075] At the following step 216, an image processing is performed so that an image equivalent to photoprint 62B may be obtained from memory 30A in press can data in the image-processing section 104 of read-out and the autoset rise section 100. Then, at step 218, image properties such as a gray level histogram, average concentration, LATD, a shadow, and highlights, are extracted from the press can data by which the image processing was carried out.

[0076] If an image property is extracted from the press can data of photoprint 62B, at step 220, the criteria image property (image property of photoprint 62A) memorized in the image property and memory 124 of this photoprint 62B will be compared, and the amendment conditions for making the image property of photoprint 62B in agreement with the image property of photoprint 62A will be set up (step 222).

[0077] Then, at step 224, the image processing to the press can data of photoprint 62B is performed based on the amendment conditions set up in the amendment conditioning section 122. Moreover, at step 226, the parameter for performing the image processing to fine scan data is set up based on the image processing performed to the press can data of photoprint 62B. In addition, before the extract of the image property from the press can data of photoprint 62B performs an image processing in the image-processing section 104, it is performed, and based on the comparison result of a criteria image property, it may be made to perform the image processing to the press can data of photoprint 62B.

[0078] Thus, after a setup of a parameter based on the image processing and image processing [illegible] of photoprint 62B is completed, it shifts to step 228 and the image processing [illegible] read. The image processing [illegible] the image processing [illegible] which is the image-processing section 112 of the fine scan data processing section 102, and set up fine scan data in the parameter setup section 112 to read-out from memory 30B, and is fine scan data.

[0079] The body of the fine scan data-processing section 102, an image processing equivalent to the processing to press can data can be performed to fine scan data.

[0080] Termination of the image processing to fine scan data outputs the fine scan data by which the image processing was carried out to the printer processor 42 of the printer processor 18 as image data for exposing printing paper 50 at step 230.

[0081] In the printer processor 18, if image data is inputted from an image processing system 12, after carrying out scan exposure of the printing paper 50 based on this image data, the color development, bleaching fixing, rinsing, desiccation processing, etc. will be performed, and it will discharge as a photoprint 64. In addition, at step 232, it checks whether the processing to all photoprint 62B chosen as a similar scene has been completed, and it repeats until the glow increase processing to all photoprint 62B is completed.

[0082] Thus, the image quality of a result is arranged by the created photoprint 64 so that it may be visible to a clearly similar scene, since image properties, such as average concentration, and a shadow, highlights, are in agreement and color balance, image concentration, color gradation, etc. are the same between the photoprint 64 which copied the image of photoprint 62A, and the photoprint 64 which copied the image of photoprint 62B.

[0083] thus, in the image processing system 12 prepared in the print processing system 10 The extract of the image property from image data, the comparison of the extracted image property, a setup of the amendment conditions based on a comparison result. Since the automatable various image processings of the image processing based on a setup of a parameter based on the image processing and image processing based on the set-up amendment conditions and a parameter etc. are performed Creation of the photoprint 64 doubled with the image of photoprint 62A and the photoprint 64 which aligned the image of photoprint 62B with the image of

photoprint 62A is easy

[0084] Therefore, in the print processing system 10, when the photoprint 62 of two or more sheets on which the scene similar like a photograph of a star or a photographic strip, for example is recorded is carried in, the quality of finished goods of the image formed in the photoprint 64 to each photoprint 62 can be arranged uniformly.

[0085] In addition, although the image of photoprint 62A used as criteria is read into the beginning and the criteria image property was set up with the gestalt of this operation For example, the image which serves as criteria from the image which read the image of the photoprint 62 of two or more sheets, displayed on monitor 12M, and was displayed on monitor 12M is chosen. A criteria image property is extracted from the image data of the selected image, and you may make it double the image property of the image data of the image of ** with this criteria image property.

[0086] Moreover, with the gestalt of this operation, although the scanner 28 was used as an image data read in means, an image data read in means is not restricted to this. For example, when reading the image data of the image recorded on the photographic film at the time of a coincidence print and creating a photoprint 62 from this image data, while memorizing the image data when creating a photoprint 62 to a hard disk or an image server, the information from which an image data storage location becomes clear is recorded on a photoprint 62.

[0087] When a photoprint 62 is carried in and the increase of a glow is requested by this, based on the information currently recorded on the photoprint 62, it may be made to perform image data for the extract of an image property, the exposure to printing paper 50, etc. based on read-out and this image data from storage means, image servers, etc., such as a hard disk.

[0088] That is, when the photoprint 62 which serves as a manuscript based on the image data read from the photographic film and the image data created by the digital still camera is created and this image data is memorized by various storage means, image servers, etc., such as a hard disk, an image processing system 12 may be the configuration of reading the image data [illegible] the photoprint 62 from storage means and image servers, etc.

[illegible]

[0090] It is common to record the print conditions which [illegible] the time of a coincidence print etc. on a photoprint 62 for example, by [illegible] the time of requesting an image property from here, the print conditions currently recorded on the photoprint 62 are read, it asks for original image data from this print conditions, and it may be made to extract an image property from this image data.

[0090] In addition, as an image property for making the image of a similar [illegible] with the gestalt of this operation Although creation of a gray level histogram, average concentration, LATD (large area transmission density), highlights (least concentration), a shadow (maximum density), etc. are used and this image property was extracted from press can data in the image property extract section 120 The image property to extract is not limited to this, and the proper by arbitration can be used if it is the image property of the sake for making the scene of the image formed in a photoprint 64 be [a scene / it] in agreement thru/or approximate. Moreover, as such a property, if average concentration, highlights, and a shadow are included at least, color balance, image concentration, and color gradation are made in agreement, and the quality of finished goods can be arranged so that it may be visible to the image of a similar scene.

[0091] Moreover, with the gestalt of this operation, if a manuscript is not restricted at this using the photoprint 62 which formed the image in printing paper 50 as a manuscript and a visible image is formed, the image recording medium of arbitration can be used.

[0092] Furthermore, although the image processing system 12 which applied this invention to the print processing system 10 was used with the gestalt of this operation, application of the image processing system of this invention cannot be restricted to this, and can be applied to the image processing system of the arbitration which performs an image processing to the image data obtained from the image formed in the image recording medium.

[0093]

[Effect of the Invention] As explained above, according to that of this invention, the image data

for forming the image which arranged the quality of finished goods with the image used as criteria can be obtained by performing an image processing so that the image property extracted from the image data of a manuscript may be doubled with a criteria image property.
[0094] The outstanding effectiveness referred to as being able to obtain easily the photoprint which arranged the quality of finished goods of an image from the photoprint of two or more sheets in which the image of a scene similar, for example was formed by this is acquired.

[Translation done.]

* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] It is the block diagram showing the outline configuration of the print processing system applied to the gestalt of this operation.
[Drawing 2] It is the general-view Fig. showing an example of the image processing system used for a print processing system, and a printer processor.
[Drawing 3] It is the outline block diagram showing an example of the scanner used as an image data read in means.
[Drawing 4] It is the outline block diagram showing an example of the printer processor used as an image copy means.
[Drawing 5] It is the block diagram showing the outline configuration of the important section of an image processing system.
[Drawing 6] It is the flow chart in which a similar scene's printing additionally and showing the outline of processing.
[Description of Notations]
10 Print Processing System
12 Image Processing System
18 Printer Processor
28 Scanner (Image Data Read in Means)
42 Printer
44 Processor
50 Printing Paper (Image Recording Medium)
62 (62A, 62B) Photoprint (manuscript)
64 Photoprint
100 Autoset Rise Section
102 Fan Scan Data-Processing Section (Image-Processing Means)
104 Image-Processing Section
110 Parameter Setup Section (Amendment Conditioning Means)
112 Image-Processing Means (Image-Processing Means)
120 Image Property Extract Section (Extract Means)
122 Amendment Conditioning Section (Amendment Conditioning Means)

[Translation done.]

(19)日本国特許庁（ＪＰ）　(12) **公開特許公報（Ａ）**　(11)特許出願公開番号
特開2002－171408
（P2002－171408A）
(43)公開日　平成14年６月14日(2002.6.14)

(51)Int.Cl.'	識別記号	ＦＩ		テーマコード（参考）
Ｈ０４Ｎ　1/405		Ｇ０３Ｇ　15/00	３０３	２Ｈ０２７
Ｇ０３Ｇ　15/00	３０３	Ｇ０６Ｔ　7/00	２００Ｂ	５Ｃ０７７
Ｇ０６Ｔ　7/00	２００	Ｈ０４Ｎ　1/40	Ｂ	５Ｌ０９６
Ｈ０４Ｎ　1/407			１０１Ｅ	

審査請求　未請求　請求項の数３　ＯＬ　（全 12 頁）

(21)出願番号　特願2000－366640(P2000－366640)

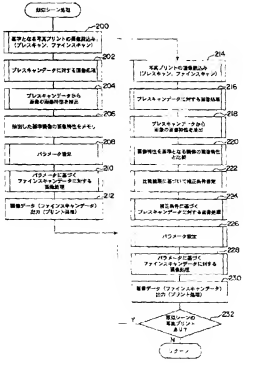
(22)出願日　平成12年12月１日(2000.12.1)

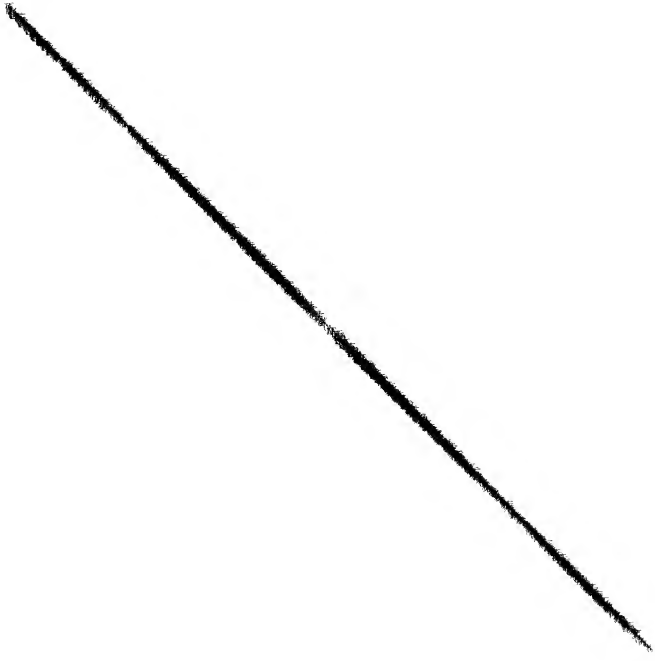
(71)出願人　000005201
富士写真フイルム株式会社
神奈川県南足柄市中沼210番地
(72)発明者　久保　雅裕
神奈川県足柄上郡開成町宮台798番地　富士写真フイルム株式会社内
(74)代理人　100079049
弁理士　中島　淳　（外３名）

Ｆターム(参考)　2Ｈ027 DB01 DE07 EA20 EB03 EC06 EC11 EC20
5Ｃ077 LL18 LL19 MM20 PP15 PP46 PP52 PP53 PP55 PQ23
5Ｌ096 AA02 AA03 FA14 FA32 FA37 GA08

(54)【発明の名称】　画像処理方法及び画像処理装置

(57)【要約】
【課題】　類似したシーンの画像が形成された写真プリントから新たな写真プリントを作成するときに、容易に仕上がりの色階調等を揃えることができるようにする。
【解決手段】　写真プリントの複製処理を行うときに、基準となる写真プリントの画像データから基準画像特性を抽出する（ステップ２００～２１２）　また、基準となる写真プリントと類似したシーンの写真プリントに対する画像処理を行うときに、この写真プリントの画像データから抽出した画像特性を、基準画像特性と一致するように画像データに対する画像処理を行う（ステップ２１４～２３２）　これにより、マニュアル操作を行うことなく、基準となる写真プリントの画像を複写した写真プリントと、類似シーンの写真プリントの画像を複写した写真プリントの色階調等の仕上がり品質を揃えることができる





を、画像特性が基準画像特性と一致するように設定した補正条件に基づいて画像処理を施す。

【００１１】これにより、例えば、類似したシーンが形成されている複数の原稿の画像を、画像記録媒体に形成するときに、画像の仕上がりを基準としている原稿の画像の仕上がりと一致させるのが容易となり、類似したシーンが異なるシーンと見えてしまうことがない。

【００１２】本発明の画像処理装置は、複数の原稿のそれぞれに形成されている画像の画像データからそれぞれの画像特性を抽出する抽出手段と、前記抽出手段によって抽出した画像特性と前記複数の原稿の中から基準として設定した原稿の画像特性である基準画像特性とを比較して、抽出した画像特性が基準画像特性と一致するように前記画像データに対する補正条件を設定する補正条件設定手段と、を含むことを特徴とする。

【００１３】この発明によれば、原稿に記録されている画像の画像データを画像データ読込み手段によって読み込む。抽出手段は、この画像データから色階調等の画像の仕上がりに影響する画像特性を抽出する。また、補正条件設定手段は、この画像特性が基準となる画像の画像特性（基準画像特性）と一致するように、画像処理を行う時の補正条件を設定する。この補正条件に基づいて、画像データに対する画像処理を行うことにより、画像特性が基準となる画像と仕上がりが一致する画像データを生成することができる。

【００１４】これにより、類似したシーンが形成された複数の原稿の画像を画像記録媒体に形成するときに、例えば複数の原稿から基準となる原稿を指定することにより、この基準となる原稿の画像特性に合わせた画像となる画像データの生成が可能となり、画像記録媒体に形成する画像の仕上がりを揃えることができ、類似したシーンが異なるシーンに見えてしまうことがない。

【００１５】このとき、画像データからの画像特性の抽出や、画像特性に基づいた補正条件の設定は、自動化が可能となるので、容易かつ正確に画像記録媒体に形成する画像の仕上がりを揃えることができる。すなわち、補正条件をマニュアル操作によって設定することなく、画像記録媒体に形成する複数の画像の仕上がりを揃えることができる。

【００１６】このような本発明に適用される複数の原稿は、複数の原稿の中で被写体ないし背景が同じで連続して撮影された画像や、被写体又は背景が類似している画像が形成されているものであればよい。

【００１７】また、本発明の画像処理装置では、前記抽出手段が、前記画像特性として少なくともハイライト、シャドー及び画像濃度を抽出し、前記補正条件設定手段がハイライト、シャドー、画像濃度の平均値ないし中央値を基準画像特性と合わせるように設定するものであればよい。

【００１８】この発明によれば、画像特性のうちのハイライト、シャドー、画像濃度を画像特性として抽出する。例えば、類似したシーンの画像の間では、ハイライト、シャドーまたは画像濃度の平均値ないし中央値が一致することになる。すなわち、被写体または背景が同じであれば画像のハイライト、シャドーまたは画像濃度の平均値や中央値が一致するはずである。

【００１９】したがって、類似したシーンの画像であれば、画像記録媒体に形成したときの画像のハイライト、シャドー、画像濃度の平均値ないし中央値を合わせることにより、画像記録媒体に形成した画像の仕上がりを揃えることができる。

【００２０】

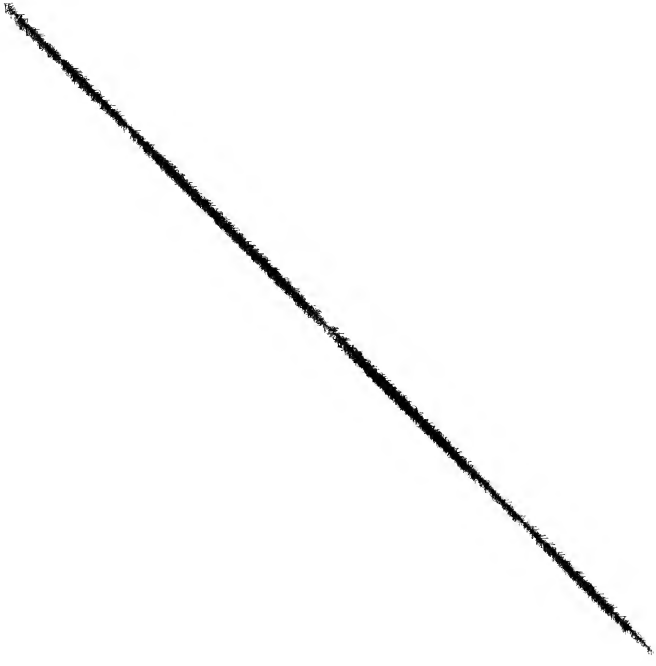
【発明の実施の形態】以下に図面を参照しながら本発明の実施の形態を説明する。図１には、本実施の形態に適用したプリント処理システム１０の概略構成を示している。プリント処理システム１０は、画像処理装置１２及びプリンタプロセッサ１８を備えており、画像処理装置１２とプリンタプロセッサ１８は、例えばＩＥＥＥ１３９４規格等のインターフェイスによって接続されている。これにより、画像処理装置１２とプリンタプロセッサ１８の間で、画像データ等の送受信が可能となっている。

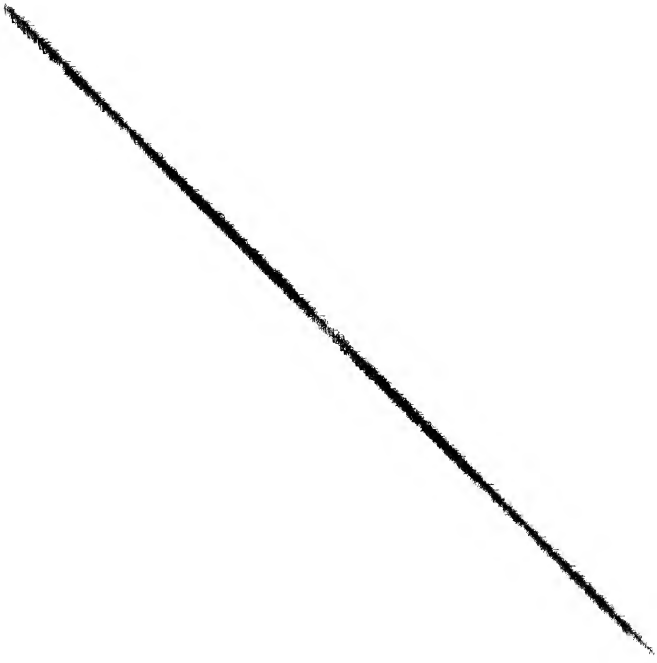
【００２１】図１及び図２に示すように、プリンタプロセッサ１８は、スキャナ２８、デジタルプリンタ（以下「プリンタ４２」と言う）及びプロセッサ４４によって形成されており、スキャナ２８によって読込んだ画像データに応じて、プリンタ４２で写真感光材料の一種である印画紙５０（図４参照）を走査露光可能となっている。また、プロセッサ４４は、プリンタ４２によって走査露光した印画紙５０を現像処理する。なお、プリント処理システム１０としては、スキャナ２８とプリンタ１２及びプロセッサ４４が別体であっても良い。

【００２２】プリント処理システム１０では、スキャナ２８を画像データ読取り手段として用いており、写真プリント６２等の種々の原稿に形成されている画像をスキャナ２８によって読込んで、読込んだ画像データを画像処理装置１２へ出力する。また、プリント処理システム１０では、画像処理装置１２によって画像処理の施した画像データをプリンタプロセッサ１８のプリンタ１２へ出力する。これにより、図１に示すように、写真プリント６２から新たな写真プリント（以下「写真プリント６４」と言う）を作成するＤｒｙ　ｌａｂサービスが可能となっている。

【００２３】図３に示すように、スキャナ２８は、Ｒ、Ｇ、Ｂの各色の光を原稿（原稿画像）へ向けて発する光源７６（７６Ｒ、７６Ｇ、７６Ｂ）と、原稿画像によって反射したＲ、Ｇ、Ｂの各色の光を受けるＣＣＤラインイメージセンサ７８Ｒ、７８Ｇ、７８Ｂによって形成されている（以下ＣＣＤラインセンサ８０と言う）。

【００２４】スキャナ２８には、透明ガラスであるフラ





ル操作Ｉ によって入力することにより、入力される補正条件に基づいた画像処理が行われると共に、この画像処理に応じたパラメータの設定変更が行われる。

【００５９】画像処理装置１２は、プレスキャンデータに基づいて各種のパラメータを設定すると、画像メモリ３０（メモリ３０Ｂ）に記憶しているファインスキャンデータを読出し、ファインスキャンデータ処理部１０２でこのパラメータに基づく、ファインスキャンデータに対する画像処理を施す。

【００６０】このようにして画像処理装置１２で画像処理が施されたファインスキャンデータは、印画紙５０を露光するための画像データに変換されて、プリンタプロセッサ１８のプリンタ４２へ出力される。

【００６１】プリンタ４２では、画像処理装置１２から入力される画像データに基づいて印画紙５０を走査露光すると、この印画紙５０をプロセッサ４４へ送り出す。プロセッサ４４は、画像露光された印画紙５０が送り込まれると、この印画紙５０に対して、処理液処理及び乾燥処理を施した後、画像コマ毎に切断して排出する。これにより、プリント処理システム１０では、写真プリント６２の画像と同等の仕上がりの画像を形成した写真プリント６４を得ることができる。

【００６２】ところで、類似したシーンの画像が形成されている複数枚の写真プリント６２が持ち込まれて、Ｐｒｉｎｔ Ｉｎ Ｐｒｉｎｔサービスが依頼されることがある。このとき、類似したシーンであるにもかかわらず、色バランスや画像濃度、色調調等に相違があるために、類似したシーンとして見えないことがあり、類似したシートであると見えるような写真プリント６４の作成が依頼されることがある。すなわち、複数枚の写真プリント６２を複写して写真プリント６４を作成するときに、写真プリント６４の仕上がりの画質を揃えるように依頼されることがある。

【００６３】ここで、図６に示すフローチャートを参照しながら類似したシーンの写真プリント６２から仕上がりの画質を揃えた写真プリント６４を得るための処理の実施例を説明する。

【００６４】このフローチャートは、図示しない操作手段によって類似シーンの複写処理が選択されることにより実行され、最初のステップ２００では、類似したシーンの画像が形成されている複数枚の写真プリント６２のうちから基準となって指定された写真プリント６２Ａをスキャナ２８に装填し、この写真プリント６２Ａに形成されている画像のプレスキャンおよびファインスキャンを行う。これにより得られる画像データであるプレスキャンデータとファインスキャンデータは、それぞれ画像処理装置１２の画像メモリ３０（メモリ３０Ａ、３０Ｂ）に記憶される。

【００６５】写真プリント６２Ａの画像に対するプレスキャンデータとファインスキャンデータが画像メモリ３０に記憶されると、ステップ２０２へ移行して、オートセットアップ部１００の画像処理部１０１で、メモリ３０Ａに記憶しているプレスキャンデータを読込み、このプレスキャンデータに対して画像処理を施す。

【００６６】このとき、画像処理部１０１では、写真プリント６２Ａの画像を複写した写真プリント６４に形成される画像の仕上がりが写真プリント６２Ａの画像の仕上がりと一致するように画像処理を施す。

【００６７】また、プレスキャンデータに対する画像処理は、通常、自動的に行われるが、写真プリント６４の仕上がりを補正するときには、このステップで画像処理を行う時の処理条件や補正条件等をキー操作によって入力するマニュアル操作で行うようにしても良い。これにより、基準となる画像を所望の仕上がりや所望の画質にすることができる。

【００６８】基準となる写真プリント６２Ａの画像のプレスキャンデータに対する画像処理が終了すると、ステップ２０４へ移行し、画像処理の終了したプレスキャンデータから濃度ヒストグラム、透過濃度、ＬＡＩＤ、ハイライト、シャドー等の画像特性の抽出を行う。ここで抽出した画像特性は、基準画像特性としてメモリ１２４に記憶される（ステップ２０６）。

【００６９】また、ステップ２０８では、画像処理部１０４での処理結果に基づいて、ファインスキャンデータに対してプレスキャンデータと同等の画像処理を施すための各種のパラメータを設定する。

【００７０】このようにしてプレスキャンデータに対する画像処理が終了すると、ステップ２１０へ移行して、ファインスキャンデータに対する画像処理を行う。ファインスキャンデータに対する画像処理は、ファインスキャンデータ処理部１０２へ、メモリ３０Ｂに記憶しているファインスキャンデータを読み出し、このファインスキャンデータに対してパラメータ設定部１１０で設定されたパラメータに基づいて画像処理を施す。

【００７１】このとき、パラメータ設定部１１０で設定された各種パラメータに基づいて、ファインスキャンデータに対する画像処理を行うことにより、プレスキャンデータに対する画像処理と同等の画像処理を施すことができる。

【００７２】ファンスキャンデータに対する画像処理が終了すると、ステップ２１２では、処理の終了したファインスキャンデータに応じた画像データ（例えばプリンタ４２での画像露光用に変換された画像データ）をプリンタプロセッサ１８のプリンタ１２へ出力する。

【００７３】これにより、プリンタプロセッサ１８では、画像処理装置１２で処理した画像データに応じて印画紙５０を露光し、写真プリント６２Ａの画像を複写した写真プリント６４を作成する。

【００７４】一方、基準となる画像が記録されている写真プリント６２Ａに対する処理が終了すると、ステップ

２１１へ移行して、スキャナ２８に写真プリント６２Ａに形成されている画像と類似したシーンの画像が形成された写真プリント６２Ｂを装填し、この写真プリント６２Ｂの画像を読み込む　これにより得られる画像データ　プレスキャンデータ及びファインスキャンデータ）は、画像メモリ３０（メモリ３０Ａ、３０Ｂ）に記憶される

【００７５】次ぎのステップ２１６では、メモリ３０Ａからプレスキャンデータを読出し、オートセットアップ部１００の画像処理部１０４で写真プリント６２Ｂと同等の画像が得られるように画像処理を施す　この後、ステップ２１８では、画像処理されたプレスキャンデータから、濃度ヒストグラム、平均濃度、ＬＡＴＤ、シャドー及びハイライト等の画像特性を抽出する。

【００７６】写真プリント６２Ｂのプレスキャンデータから画像特性を抽出すると、ステップ２２０では、この写真プリント６２Ｂの画像特性とメモリ１２４に記憶している基準画像特性（写真プリント６２Ａの画像特性）とを比較し、写真プリント６２Ｂの画像特性を写真プリント６２Ａの画像特性と一致させるための補正条件を設定する　ステップ２２２）

【００７７】この後　ステップ２２４では、補正条件設定部１２２で設定した補正条件に基づいて、写真プリント６２Ｂのプレスキャンデータに対する画像処理を行う　また、ステップ２２６では、写真プリント６２Ｂのプレスキャンデータに対して施した画像処理に基づいて、ファインスキャンデータに対する画像処理を行うためのパラメータを設定する。なお、写真プリント６２Ｂのプレスキャンデータからの画像特性の抽出は、画像処理部１０４で画像処理を施す前に行い、基準画像特性の比較結果に基づいて写真プリント６２Ｂのプレスキャンデータに対する画像処理を行うようにしても良い。

【００７８】このようにして写真プリント６２Ｂのプレスキャンデータに対する画像処理及び画像処理に基づいたパラメータの設定が終了すると、ステップ２２８へ移行し、ファインスキャンデータに対する画像処理を行う　このファインスキャンデータに対する画像処理は、ファインスキャンデータをメモリ３０Ｂから読出し、このファインスキャンデータに対して、ファインスキャンデータ処理部１０２の画像処理部１１２で、パラメータ設定部１１０で設定したパラメータに基づいて行われる

【００７９】これにより、ファインスキャンデータ処理部１０２では　プレスキャンデータに対する処理と同等の画像処理を、ファインスキャンデータに対して施すことができる

【００８０】ファインスキャンデータに対する画像処理が終了すると、ステップ２３０では、画像処理されたファインスキャンデータを、印画紙５０を露光するための画像データとしてプリンタプロセッサ１８のプリンタ４２へ出力する。

【００８１】プリンタプロセッサ１８では、画像処理装置１２から画像データが入力されると、この画像データに基づいて印画紙５０を走査露光した後、発色現像、漂白定着、水洗、乾燥処理等を施し、写真プリント６４として排出する。なお、ステップ２３２では、類似したシーンとして選択されている全ての写真プリント６２Ｂに対する処理が終了したか否かを確認し、全ての写真プリント６２Ｂに対する焼増し処理が終了するまで繰り返す。

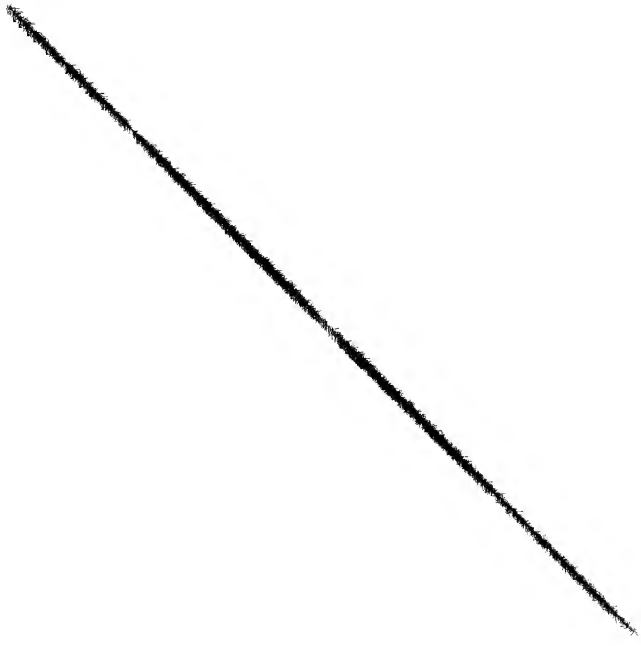
【００８２】このようにして作成された写真プリント６４は、写真プリント６２Ａの画像を変更した写真プリント６４と、写真プリント６２Ｂの画像を変更した写真プリント６４との間では、平均濃度やシャドー、ハイライト等の画像特性が一致されているので、色バランス、画像濃度、色階調等が同じになっているので、明確に類似したシーンに見えるように仕上がりの画質が揃えられている。

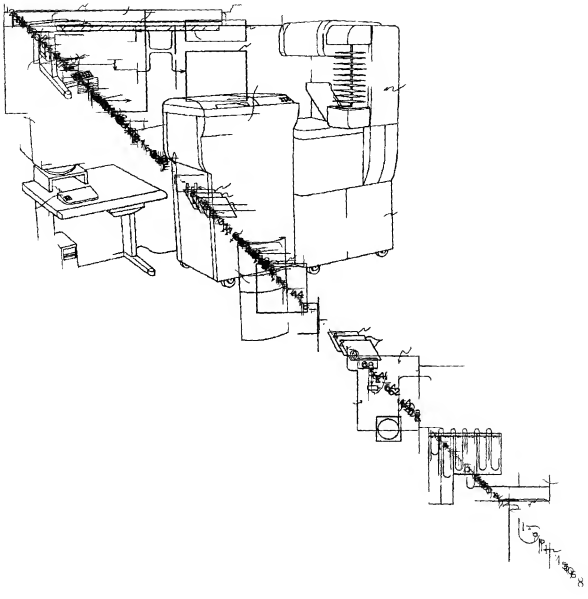
【００８３】このようにプリント処理システム１０に設けている画像処理装置１２では、画像データからの画像特性の抽出、抽出した画像特性の比較、比較結果に基づいた補正条件の設定、設定した補正条件に基づいた画像処理、画像処理に基づいたパラメータの設定、パラメータに基づいた画像処理等の自動化が可能な種々の画像処理を行うので、写真プリント６２Ａの画像に合わせた写真プリント６４と、写真プリント６２Ｂの画像を写真プリント６２Ａの画像に合わせた写真プリント６４の作成が容易となっている

【００８４】したがって、プリント処理システム１０では、例えば天体写真や連続写真などのように類似したシーンが記録されている複数枚の写真プリント６２が持ち込まれた場合に、それぞれの写真プリント６２に対する写真プリント６４に形成した画像の仕上がり品質を一定に揃えることができる

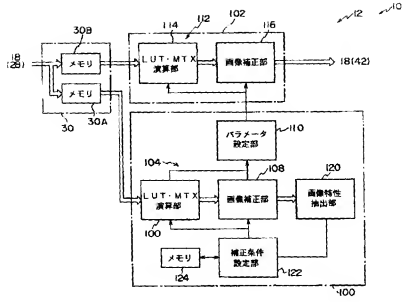
【００８５】なお、本実施の形態では、最初に基準となる写真プリント６２Ａの画像を読込んで基準画像特性を設定するようにしたが、例えば　複数枚の写真プリント６２の画像を読込んでモニタ１２Ｍに表示し、モニタ１２Ｍに表示した画像から基準となる画像を選択して、選択した画像の画像データから基準画像特性を抽出し、この画像の画像データの画像特性を、この基準画像特性に合わせるようにしても良。

【００８６】また、本実施の形態では、画像データ読込み手段としてスキャナ２８を用いたが、画像データ読込み手段はこれに限るものではない。例えば、処理プリント時に写真フィルムに記録された画像の画像データを読込んで、この画像データから写真プリント６２を作成する場合、写真プリント６２を作成するときの画像データを、ハードディスクや画像サーバーに記憶するとともに、写真プリント６２に画像データの記憶位置が明確となる情

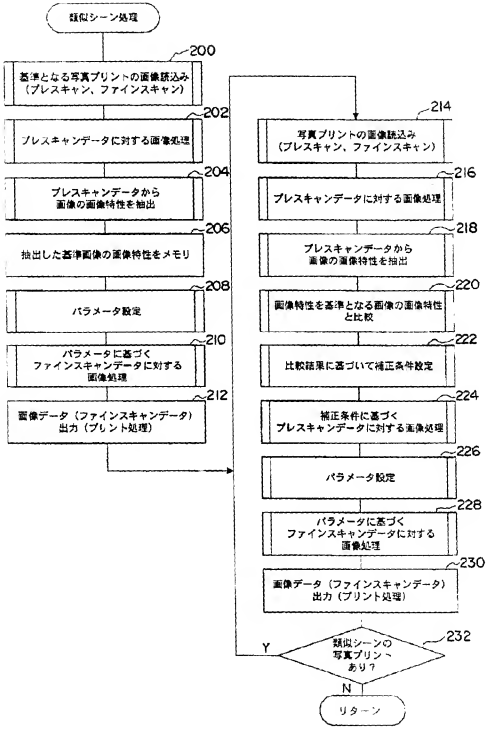




【図５】


12
10
114
112
102
116
309
18
(28)
メモリ
メモリ
30
30A
L U T・M T X
演算部
画像補正部
18(42)
パラメータ
設定部
110
104
108
120
L U T・M T X
演算部
画像補正部
画像特性
抽出部
100
メモリ
124
補正条件
設定部
122
100

【図６】


類似シーン処理
200
基準となる写真プリントの画像読込み
（プレスキャン、ファインスキャン）
202
プレスキャンデータに対する画像処理
204
プレスキャンデータから
画像の画像特性を抽出
206
抽出した基準画像の画像特性をメモリ
208
パラメータ設定
210
パラメータに基づく
ファインスキャンデータに対する
画像処理
212
画像データ（ファインスキャンデータ）
出力（プリント処理）
214
写真プリントの画像読込み
（プレスキャン、ファインスキャン）
216
プレスキャンデータに対する画像処理
218
プレスキャンデータから
画像の画像特性を抽出
220
画像特性を基準となる画像の画像特性
と比較
222
比較結果に基づいて補正条件設定
224
補正条件に基づく
プレスキャンデータに対する画像処理
226
パラメータ設定
228
パラメータに基づく
ファインスキャンデータに対する
画像処理
230
画像データ（ファインスキャンデータ）
出力（プリント処理）
232
類似シーンの
写真プリン～
あり？
Y
N
リターン